

The background of the slide is a landscape photograph showing a wide, flat, light-colored area (possibly a dry lake bed or salt flat) in the foreground, leading to a low, hilly horizon under a vast blue sky filled with large, white, fluffy clouds.

Environmental Permitting Issues

Prepared for

CIBO Annual Conference – San Diego, California

October 12, 2012

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What We Will Be Covering

- Permitting Overview
- Air Permitting Challenges
 - PSD Modeling
 - NAAQS Revisions
 - Ozone,
 - PM_{2.5},
 - 1-Hour SO₂ & NO₂
 - Modeling Challenges



Permitting New Facilities In Today's Environment

It Can Be Done! (With Some Challenges)

- Need a Team
 - Owners Engineer
 - Environmental Expert
 - Environmental Lawyer
 - Vendor Input from Owner
- Identify Challenges Early and Prepare for Them
- Do Not Cut Corners
- Define the Goals, Objectives and Purpose of the Project

Goals, Objectives and Purpose

- Determine where your project fits to determine requirements
 - Utility - EGU
 - Industrial
- Few new coal fired projects today
- Lots of converting to gas or replacing existing power units
- For facility modifications, more times than not, the new source does not cause the modeling challenges – it is the existing sources.

Air Permitting Challenges

- Stay in attainment areas if possible. If not, investigate offset availability.
- Stay out of PSD permitting if possible
 - Difficult for GHGs and PM_{2.5}
 - Requires NAAQS Compliance demonstration
- Tightening NAAQS Standards - Model as early as possible
 - Ozone
 - 24 Hour PM_{2.5}
 - 1 Hour SO₂
 - 1 Hour NO₂
- Modeling Issues
 - Increase dispersion or reduce emissions
 - Enhanced modeling techniques to reduce the inherent conservatism
 - Perform monitoring on the site

PSD Threshold

Pollutant	Minor Source Threshold (tpy)
CO	100
NO _x	40
SO ₂	40
PM _{2.5}	10
PM ₁₀	15
VOC	40
Pb	0.6
H ₂ SO ₄	7

NAAQS Revisions/Ratchets

- Ozone – 1997, 2008, 2014?
 - Obama halted reconsideration of 2008 rule in September 2012
 - October 2013 proposal/July 2014 final
- PM_{2.5} – 1997, 2006, 2012?
 - June 2012 proposal/December 2012 final
- SO₂ – new 1-hour standard in 2010
 - Implementation uncertainty
- NO₂ – new 1-hour standard in 2010

Ozone NAAQS

- EPA has restarted process of implementing the 2008 standard
 - Non-attainment area designations finalized in May 2012.
- EPA is currently working on separate review of the ozone standards, scheduled to be completed in 2014.
- The standard could be lowered to **0.070 ppm** at that time, causing wide-spread non-attainment areas for Ozone.

Challenges with Fine Particulate (PM_{2.5}) NAAQS

- 24-hour standard is very stringent – 4 times lower than PM₁₀ NAAQS. EPA has proposed lowering the annual standard from 15 to as low as 11 µg/m³ in December 2012.
- Background concentrations high leaving little room for growth
- Contributions from fugitive sources
- Contributions from precursor emissions (SO₂ and NO_x)
- Proposed new secondary standard for urban visibility

A 3D graphic consisting of the number '24' in large, bold, red block letters, positioned above the word 'HOURS' in large, bold, grey block letters. The entire graphic is set against a white background with a subtle reflection effect below the letters.

1-Hour NAAQS for SO₂ and NO₂

- 1-hour standards promulgated in 2010
- Very stringent in comparison to previous NAAQS
- NAAQS limits the 3-year average of the th percentile of the maximum daily 1-hour concentrations

Pollutant	Standard (ppb)	Standard in $\mu\text{g}/\text{m}^3$	%tile of maximum daily 1-hour
SO ₂	75	197	99
NO ₂	100	188	98

1-Hour SO₂ Implementation Challenges



- Significant modeling challenges for permitting new and modified sources
 - Variability of emissions
 - AERMOD limitations
- Utilities face other new regulatory programs that will affect allowable SO₂ emissions
 - MATS
 - CSAPR
- Sierra Club advocating:
 - Modeling all medium and large SO₂ sources for compliance
 - Review of third party modeling for over 70 facilities
 - EPA object to Title V permit renewals where there is modeling evidence of non-compliance

Challenges with 1-Hour NO₂ NAAQS

- NO₂ is a secondary pollutant
 - (NO + O₃ → NO₂ + O₂)
 - Rate of conversion controls the concentration
 - Modeling often overestimates the conversion rate
- Advanced modeling approaches require in-stack NO/NO_x ratio and representative ambient ozone data
- New monitoring network required by January 2013
 - Re-designations in 2016-2017
- Multi-pollutant secondary standard to address deposition-related acidification of sensitive aquatic ecosystems
 - 5 year field study to collect data for next NAAQS review cycle



Enhanced Modeling Techniques

- SHARP: The Sub-Hourly AERMOD Run Procedure allows the user to run AERMOD using fine-resolution (< 1 hour meteorology). Addressed calm wind periods.
- DISTANCE: The DISTANCE_DEBUG procedure provides additional output that can be used to evaluate causes for high concentrations. Suggest the model should not be used for short term impact predictions beyond 20 km vs. 50 km now.
- EMVAP: The Emissions Variability Processor allows the user to run AERMOD by sampling from an emission distribution. Uses a Monte-Carlo procedure to perform a probabilistic impact analysis to generate a realistic impact.

Can be downloaded from EPRI:

<http://sourceforge.net/projects/epri-dispersion/>

Questions?



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